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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/751,467

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Yun-gi Kim

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EXAMINER

MRUK, GEOFFREY S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/751,467	Applicant(s) KIM ET AL.	
	Examiner Geoffrey Mruk	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/21/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Pollard (US 6,540,337 B1).

With respect to claim 1, Pollard discloses a bubble-ink jet print head (Fig. 5) comprising:

- a substrate (Fig. 5, element 606) having ink chambers (Fig. 5, element 622) to store ink and resistance heat emitting bodies (Fig. 5, element 614) to heat ink (Column 4, lines 66-67) disposed thereover, and
- an ink supply passage (Fig. 5, element 604a) which penetrates the substrate, extends beyond the substrate (Fig. 5, element 620), and which is connected with the ink chambers, the ink supply passage including:
- a first trench (Fig. 8a, elements 802f, 808) formed at a first surface of the substrate (Fig. 8a, element 806) in a first pattern having a separating distance from at least one of inlets of the ink chambers and connecting portions between

the adjacent ink chambers, the first surface of the substrate having the ink chambers disposed thereover (Fig. 5, element 618), and

- a second trench (Fig. 8a, element 805p, 805q) formed at a second surface of the substrate (Fig. 8a, element 806) in a second pattern, having an area equal to or smaller than that (Fig. 12, element w) of the first trench in the range of the first pattern of the first trench, and in communication with the first trench, wherein the first trench has a depth (Fig. 8a, element t) from $5\mu\text{m}$ to $20\mu\text{m}$ (Column 5, lines 24-26, i.e. thickness t from $100\mu\text{m}$ - $2000\mu\text{m}$; Column 7, lines 61-63, i.e. 10-80% of t).

With respect to claim 3, Pollard discloses a bubble-ink jet print head (Fig. 5) comprising:

- a substrate (Fig. 5, element 606) having ink chambers (Fig. 5, element 622) to store ink and resistance heat emitting bodies (Fig. 5, element 614) to heat ink (Column 4, lines 66-67) disposed thereover, and
- an ink supply passage (Fig. 5, element 604a) which penetrates the substrate, extends beyond the substrate (Fig. 5, element 620), and which is connected to the ink chambers, the ink supply passage including:
 - a first trench (Fig. 8a, elements 802f, 808) formed at a first surface of the substrate (Fig. 8a, element 806) in a first pattern having a separating distance from at least one of inlets of the ink chambers and connecting portions between the adjacent ink chambers, the first surface of the substrate having the ink chambers (Fig. 5, element 618) disposed thereover and

- a second trench (Fig. 8a, element 805p, 805q) formed at a second surface of the substrate (Fig. 8a, element 806) in a second pattern, having an area equal to or smaller than that (Fig. 12, element w) of the first trench in the range of the first pattern of the first trench, and in communication with the first trench, wherein the separating distance (Column 8, lines 3-5, i.e. shallow shelf) is from 1 μ m to 5 μ m (Column 7, lines 55-57, i.e. trench widths; Column 8, line 4, i.e. 5-150% of the trench width).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pollard (US 6,540,337 B1) in view of Feinn et al. (US 6,561,632 B2).

With respect to claim 25, Pollard discloses an inkjet print head (Fig. 5), comprising:

- a substrate (Fig. 5, element 606), at least one heater (Fig. 5, element 614) formed on a top surface of the substrate which heats ink disposed (Column 4, lines 60-67),
- an ink chamber (Fig. 5, element 622) disposed at least partially over the at least one heater, and an ink supply opening extending through the substrate (Fig. 5,

element 620), the ink passage in fluidic communication with the ink supply chamber and the ink chamber, the ink supply opening including

- a first trench (Fig. 8a, elements 802f, 808) formed at an ink chamber side of the substrate (Fig. 8a, element 806) in a first pattern having a separated distance from at least one of inlets of the ink chambers and connecting portions between the adjacent ink chambers, and
- a second trench (Fig. 8a, element 805p, 805q) formed at a second surface of the substrate (Fig. 8a, element 806) in a second pattern, having an area equal to or area smaller than that (Fig. 12, element w) of the first trench in the range of the first pattern of the first trench, to communicate with the first trench, wherein the first trench has a depth (Fig. 8a, element t) from $5\mu\text{m}$ to $20\mu\text{m}$ (Column 5, lines 24-26, i.e. thickness t from $100\mu\text{m}$ - $2000\mu\text{m}$; Column 7, lines 61-63, i.e. 10-80% of t).

However, Pollard fails to disclose a protective layer formed on the at least one heater.

Feinn discloses a printhead where "Over the resistors 24 and AlCu metal layer is formed a silicon nitride (Si_3N_4) layer 46, having a thickness of 0.5 microns.

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the silicon nitride layer disclosed by Feinn on the resistors of Pollard. The motivation for doing so would have been "This layer provides insulation and passivation" (Column 4, lines 30-33).

Response to Arguments

Applicant's arguments filed 11 August 2006 have been fully considered but they are not persuasive. The applicant's argument that "However, even assuming *arguendo* that the Office Action's characterization of the slot 604a as an ink supply passage is not incorrect, slot 604a does not extend beyond the substrate as recited in independent claims 1 and 3. Also, absent from Pollard is any teaching of a protective layer over the heaters as recited in independent claim 25. Thus, Pollard cannot anticipate independent claims 1, 3, and 25, as amended" is not persuasive. As stated in the instant rejection, Pollard discloses element 604a being a "fluid feed slot". Second, in response to applicant's argument that "slot 604a does not extend beyond the substrate as recited in independent claims 1 and 3", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Third, the claim limitation "a protective layer formed on the at least one heater" was not present in the claims dated 21 February 2006. Thus, the combination of Pollard (US 6,540,337 B1) in view of Feinn et al. (US 6,561,632 B2) was necessitated by the amendments dated 11 August 2006.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSM
10/6/2006



STEPHEN MEIER
SUPERVISORY PATENT EXAMINER